

REMARKS/ARGUMENTS

Claims 1-12, 14-15, 17, and 19-23 were pending at the time of the mailing of the outstanding Office Action. Claim 9 has been withdrawn from consideration. By this amendment, claims 1, 9, 22 and 23 have been amended. No claims have been added or cancelled.

In the Office Action of 15 October 2009, the Examiner rejected claims 1-6, 8, 11-12, 14-15, 17, 22 and 23 under 35 U.S.C. § 102(b) as being anticipated by U.S. Pat. No. 5,563,352 to Helmig (hereinafter "Helmig"). Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Helmig in view of WO 98/07505 to Sheehan (hereinafter "Sheehan"). Claims 7, 10 and 21 were objected to as being dependent upon a rejected base claim but being allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims.

Claim 1 has been amended to recite that the second heated tube and the first heated tube are directly heated by being energized, and the second heated tube additionally heats the first heated tube by radiation of heat from the second heated tube. Support for this amendment may be found in paragraphs 0048 and 0049 of the specification, as well as Figs. 3 and 4.

To anticipate a claim, a reference must teach all elements of the claim (MPEP § 2131). The Applicant maintains that amended claim 1 (as well as non-elected claim 9, as amended) patentably distinguishes over Helmig. In Helmig, tube 100 and tube 125 are not heated by being electrically connected to a power source and then being energized. Instead, tube 100 and its contents are heated or cooled by the passage of a heated fluid or cryogen through columnar space 128, located between tube 100 and tube 125. Furthermore, due to the arrangement of tubes 100 and 125, tube 100 is not heated by radiation of heat from tube 125.

Rather, heat is transmitted by the passage of fluid through columnar space 128. Additionally, there is no teaching or suggestion in Helmig that septa 126 and 127 could transmit heat from tube 125 to tube 100. In this way, as stated in the specification, the claimed invention provides a improved temperature control over a fluid flowing through a tube, particularly at the ends of the tubes, over prior methods (see paragraph 0048 and Fig. 3).

Therefore, Helmig does not teach or suggest first and second heated tubes that are directly heated by being energized, and where the second heated tube additionally heats the first heated tube by radiation of heat from the second heated tube, as recited in claim 1. Because claims 2-8, 10-12, 14-15, 17 and 19-23 directly or indirectly depend upon and contain all the elements of claim 1, these claims also patentably distinguish over Helmig. Accordingly, withdrawal of the rejection of claims 1-6, 8, 11-12, 14-15, 17, 22 and 23 under 35 U.S.C. § 102(b) is respectfully requested.

Claim 19 stands rejected as being obvious over Helmig in view of Sheehan. To establish a prima facie case of obviousness, three requirements must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. There must also be a reasonable expectation of success and the prior art reference or references must teach or suggest all of the claim limitations. (MPEP § 2143.) The Applicant maintains that neither reference teaches or suggests all the limitations of amended claim 1, which claim 19 depends upon.

The Applicant's comments regarding distinctions between the claimed invention and Helmig, as provided above, are repeated with regard to the rejection under 35 U.S.C. § 103(a).

As with Helmig, discussed above, Sheehan also does not teach or suggest direct heating of tube 10 either by being connected to a power source and energized, or otherwise.

While an electrode (11) is present, Sheehan does not teach or suggest that electrode 11 transmits heat to tube 10. Instead, as indicated in the Office Action, Sheehan teaches that electrode 11 is designed to provide an electrical potential that may be adjustable to maintain a stable axial spray from capillary tube 10 (Sheehan, page 9, second paragraph). Contrary to the assertion made in the Office Action however, the creation of a high electric potential would have been of no consequence in a direct heating tube as claimed. The electrode of Sheehan provides an entirely different function from the electrode in the claimed invention. Combination of this type of electrode with Helmig's apparatus to arrive at the claimed invention would not have been obvious to one of ordinary skill in the art. Furthermore, because the apparatus of Sheehan is an electrospray apparatus, one of ordinary skill in the art would not have even looked to Sheehan for a teaching regarding an alteration of Helmig's chromatography apparatus.

Therefore, the Applicant maintains that claim 19 patentably distinguishes over Helmig in view of Sheehan. Withdrawal of the rejection under 35 U.S.C. § 103(a) is requested.

Claim 23 has been amended to recite that the second heated tube is fixed to the first heated tube, and the second heated tube is held outside the first heated tube at a predetermined distance. Support for this amendment may be found in the specification in paragraph 0041. The Applicant maintains that claim 23, as amended, also distinguishes over the cited prior art.

Therefore, the Applicant also maintains that the pending claims are in condition for allowance. The issuance of a Notice of Allowance is earnestly solicited.

The outstanding Office action was electronically transmitted on 15 October 2009. The Examiner set a shortened statutory period for reply of 3 months from the notification date. Therefore, a petition for a three month extension of time is hereby made with this response. The Commissioner is authorized to charge any fee required to be paid with the filing of this paper or to credit any overpayment to Deposit Account 15-0450.

Respectfully submitted,

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